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Subject: Comments on Draft Regulatory Guide DG-3021

The enclosed comments are hereby submitted on the proposed Regulatory Guide stated in the above subject on behalf of the ASME Board on Nuclear Codes and Standards (BNCS) and the committees reporting to the Board. This review is not to be construed as a position or opinion on the proposed rule changes by ASME; rather, the comments are submitted as a constructive public service, and represent the opinion of the Chairman on behalf of BNCS.

Sincerely,

C Wesley Rowley

C. W. Rowley
VP-Nuclear Codes and Standards

Enc.

cc: BNCS Members

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Comments on Draft Regulatory Guide DG-3021, Site Evaluations and Determinations of Design Earthquake Ground Motion for Seismic Design of Independent Spent Fuel Storage Installations and Monitored Retrievable Storage Installations

Appendix B, "Reference Probability..." proposes to use a 1 in 2000 probability rather than the present 1 in 10,000 probability on which nuclear plants are based. This means a lower level earthquake force would be used in ISFSI and MRS design. This may well be appropriate, but we question the rationale set forth in section B.3.2. Most of the "bullets" in this section cite simplicity, robustness, and designed-in or inherent safety features, enabling the spent-fuel casks to withstand the seismic event, as justification for selection of the lower level earthquake. We submit that the severity of the DE (design earthquake) should not be based on the ability of the installation to withstand it or on the likelihood of unacceptable consequences. The DE should be based on a conservative assessment/calculation for the site. The points made in B.3.2 are indicative of the facility's ability to withstand the quake without unacceptable results, not reasons for postulating a particular level of quake.

We also question some of the assumptions DG-3021 makes that need to be clarified or specifically detailed. It basically takes the approach that the casks are literally indestructible and are rarely moved. This would be valid as long as a cask was not lifted outside its drop analysis basis (usually less than 80 inches). Over that height, engineered impact limiters would seem necessary. It appears that the authors of DG-3021 presume that this is a rare occurrence and therefore it is unlikely the DE will happen during a cask moving operation.

Most ISFSI's do not utilize a crane system for placing/retrieving casks to/from the storage pad. The Foster Wheeler vertical concrete module system is the only one we aware of that does use a crane. The other case would be a repository (MRS) where the cask and canisters would have to be specially handled. In the case of the Foster Wheeler system, the crane runs on top of the modules. There indeed would be some magnification of the seismic loads.

We particularly object to the statement in lines 660-663 that the crane, having a 5:1 safety factor, would perform satisfactorily during a much larger quake than the design earthquake. This is fallacy. First, the design factor of 5 applies only to machinery and sometimes wire rope; crane structures have a lower design factor. Second, the crane structure itself may have a response to the earthquake that amplifies the forces. The crane must be analyzed to determine its seismic design adequacy. This analysis is specific to the crane configuration as well as to the seismic event. See ASME NOG-1 section 4150 and NRC Regulatory Guide 1.29, Regulatory Guide 1.61, Regulatory Guide 1.92, NUREG-0554, and NUREG-0800.